no other disease that quite so successfully undermines a man's efficiency, his vigor, and good spirits. Victims of malaria whether employed in the orchard or vineyard, or in the wheat field, or at dredging or in construction, are only giving half in return for their wages. The value of real estate is greatly affected. Situations otherwise ideal for permanent house sites or summer homes are made practically uninhabitable by the presence of this disease. Malaria is always a great drawback to colonization,—great areas offering the most fertile soil and best of climate, affording otherwise the best of health conditions, are made of little value because of this disease, an infection which can be controlled almost absolutely and at a small relative cost. The malaria crusades under the writer's direction during the past year gave protection at the rate of 40 cents a day per square mile, with a reduction of malaria in the first season by approximately 45 per cent.

Once the real estate booster and colonizer gets the right view point things will change. The writer had to feel much opposition at first from certain classes of people who feared that publicity would do the town an injury. The attitude is changing rapidly so that now many who were once opposed, feel that it is a good advertisement to make known that the town of so-and-so is actively engaged in fighting malaria. And certainly it is, for everybody had already been well informed of the fact that this disease was prevalent there, notwithstanding all statements to the contrary.

The time will unquestionably come, indeed is already here, when the sanitary officers of a community will be required to have a knowledge of insect control, as far as disease carriers such as mosquitos, flies and fleas are concerned.

DISTRIBUTION OF ECTO-PARASITES

(Abstract of paper presented by Professor V. L. Kellogg)

In this paper Professor Kellogg called attention to some of the interesting problems in connection with both the geographic and particularly the host distribution of the various insect ecto-parasites of birds and mammals. Specific illustrations of these problems were drawn from the conditions presented by the Mallophaga, a group to which the speaker has given special attention for many years.

One of the most striking problems in this connection is that of the presence on two or more hosts of absolutely distinct geographic range, of a common Mallophagan species. For example, there are many species of Mallophaga which are common to European and American

birds of different although usually related species and genera. Some of these cases can be explained by a circumpolar range and hence possible contact of the hosts, but in most this explanation is unavailable. Indeed in most of these cases the host individuals of the distinct American and European species are absolutely restricted to their Old World and New World habitats and never by any chance come into contact with each other. But there is no question of the identity of Mallophagan species found on these hosts. The speaker's solution for this problem is that the parasite species of the different but related host species has persisted unchanged from the common ancestor of the two or more host kinds.

The speaker pointed out that these problems of distribution of the ecto-parasites, which always have been of large biologic interest and importance, are now assuming, in the light of the discovery of the disease-disseminating possibilities of the parasites, a new interest.

THE INSECTICIDE INDUSTRIES IN CALIFORNIA

By C. W. Woodworth

California stands foremost among the states in the use of insecticides. Our annual bill for these materials amounts to somewhere in the neighborhood of a quarter of a million dollars. More than half of this money is sent out of the state but we possess a large and growing insecticide industry which is reaching out for other markets and it is likely that in the near future California will be exporting more insecticides than are being imported. Indeed, I confidently expect to see California take a leading place in the manufacture of insecticides.

In this paper I do not propose to discuss either the technical or the commercial aspects of this industry, interesting as these phases of the subject might be, but rather the relation this industry bears to economic entomologists. I am not sure we all appreciate the tremendous influence the manufacturers and dealers of insecticides are exerting. They are in touch with a hundred growers where an Experiment Station Entomologist reaches one. They have the last word when they furnish the goods just as they are about to be applied. Their advice will go far to confirm or to counteract our recommendations.

The quality and uniformity of the insecticides are factors of highest import and they are dependent solely on the care and honesty of the manufacturer or dealer.

The appreciation of the need of close co-operation is responsible for one of the distinctive features of this association. While the